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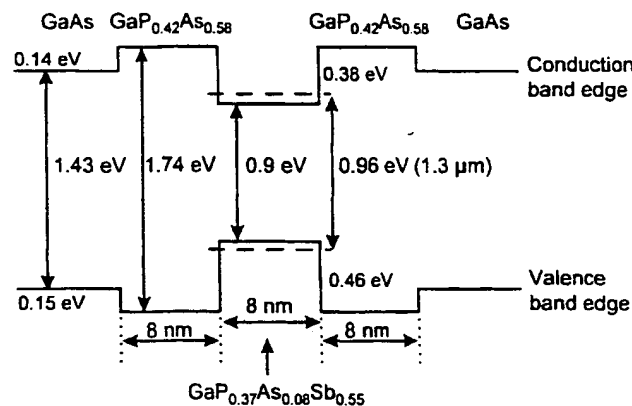
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(54) Title: LONG WAVELENGTH PSEUDOMORPHIC InGaNPAsSb TYPE-I AND TYPE-II ACTIVE LAYERS FOR THE GAAS MATERIAL SYSTEM



(57) Abstract: The invention discloses improved structures of light-processing (e.g., light-emitting and light-absorbing/sensing) devices, in particular Vertical Cavity Surface Emitting Lasers (VCSELs), such as may find use in telecommunications applications. The disclosed VSCAL devices and production methods provide for an active region having a quantum well structure grown on GaAs-containing substrates, thus providing processing compatibility for light having wavelength in the range 1.0 to 1.6 μm. The active region structure combines strain-compensating barriers with different band alignments in the quantum wells to achieve a long emission wavelength while at the same time decreasing the strain in the structure. The improved functioning of the devices disclosed results from building them with multicomponent alloy layers having a large number of constituents. The invention discloses as a key constituent in the proposed alloy layers for the active region a substance, such as nitrogen (N), suitable for reducing bandgap energy (i.e., increasing light wavelength) associated with the layers, while at the same time lowering the lattice constant associated with the structure and hence lowering strain.

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01S5/343 H01L31/00 H01L33/00 H01L31/18 H01S3/19

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01S

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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☒ Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

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